Montana Department of Transportation's Aquatic Resource Mitigation Program

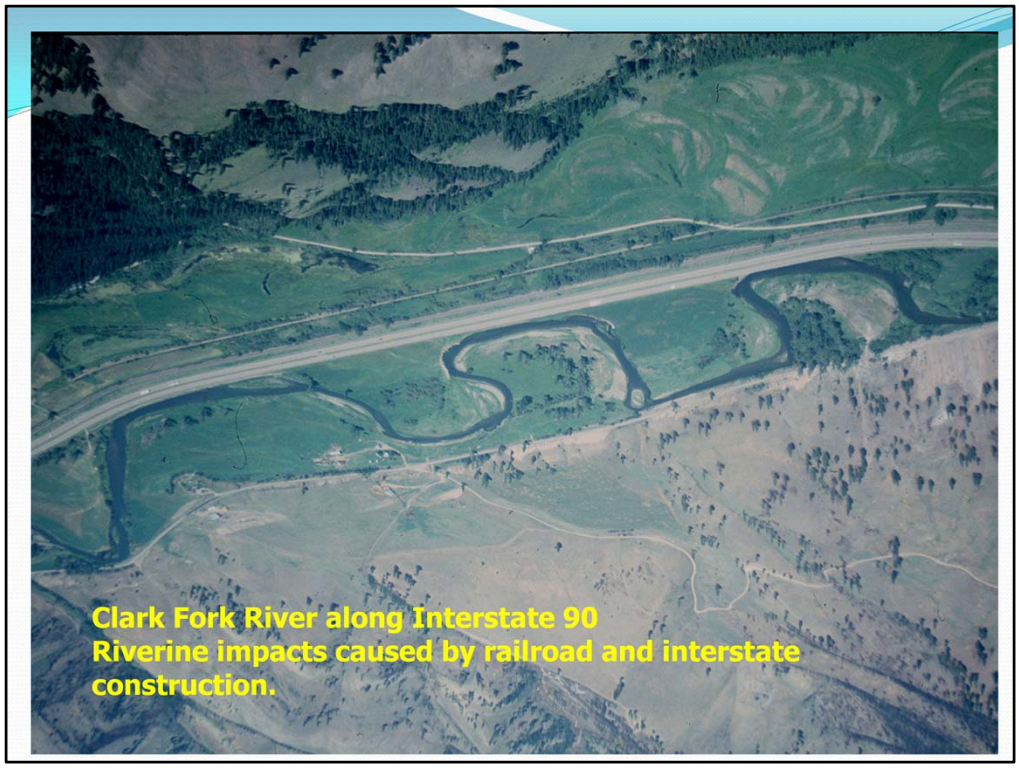

Man-Made or Natural?

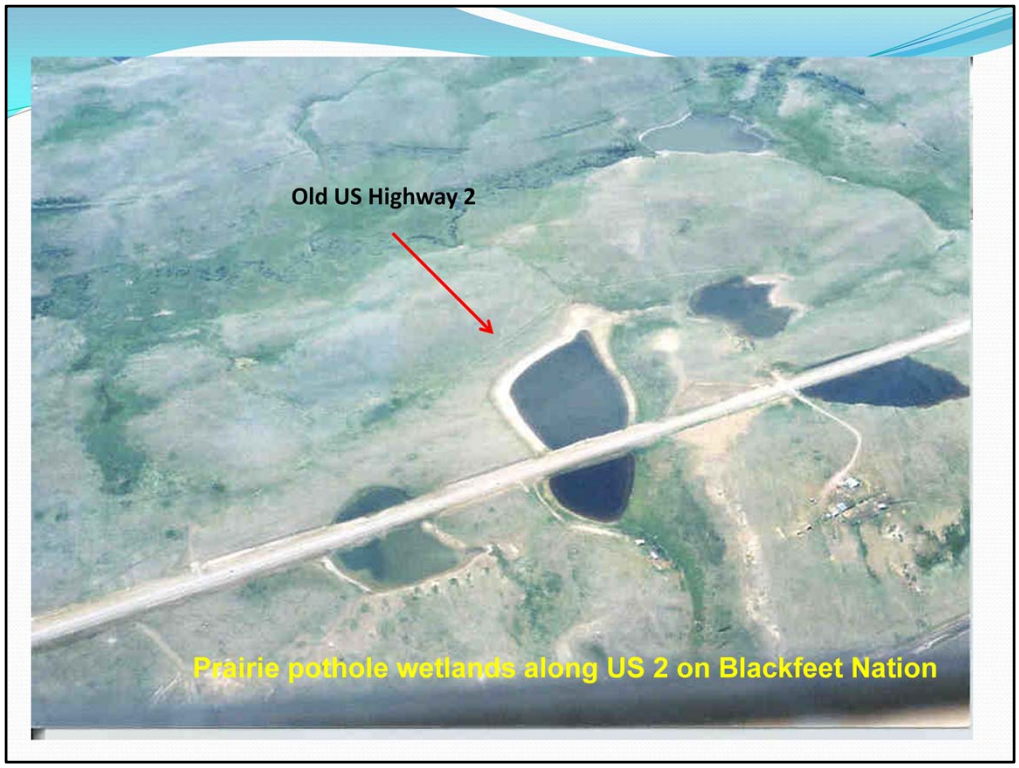
Introduction:

Since 1996, the Montana Department of Transportation has developed a very diverse and extremely effective aquatic resource mitigation program that has developed 57+ wetland and stream mitigation sites that have restored, created or preserved approximately 2,000+ acres of wetlands and approximately 46,000 linear feet of stream to replace aquatic resources impacted by transportation projects across the state.

Why does MDT mitigate?

Inter-Montane pothole wetland impacted by US Highway 93 on CSKT Reservation

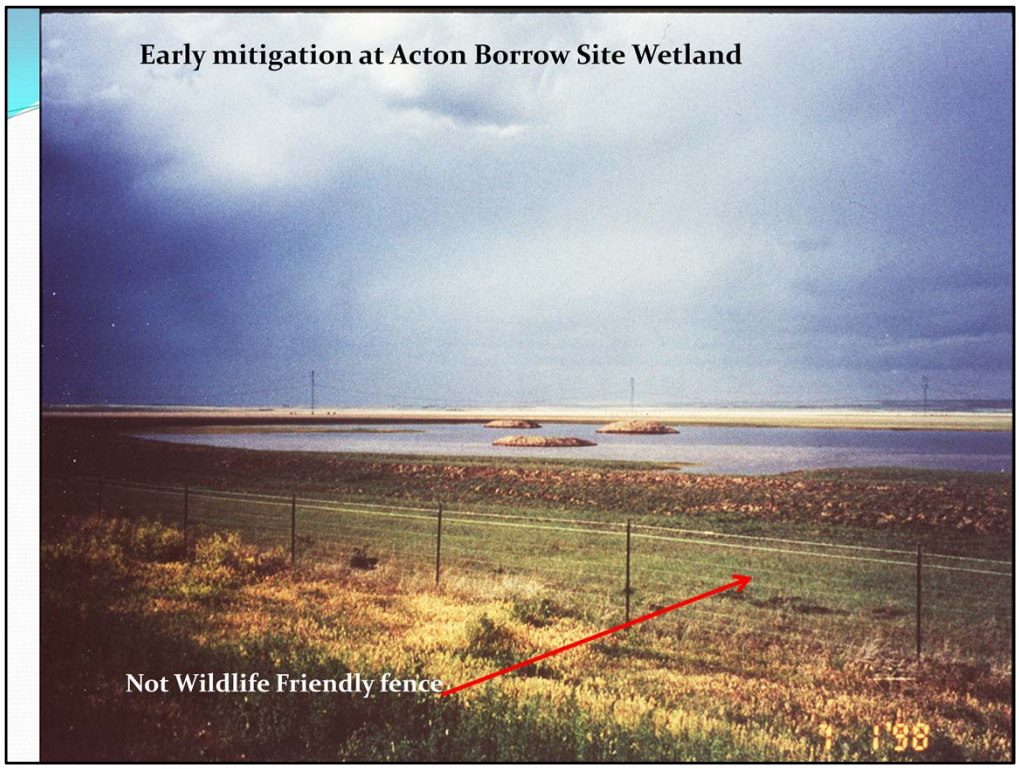

Clark Fork River along Interstate 90
Riverine impacts caused by railroad and interstate construction.


Old US Highway 2
Prairie pothole wetlands along US 2 on Blackfeet Nation

Aquatic Resource Unit formed in 1996

- Originated as the result of an FHWA / CORPS / EPA Audit in 1993/1994 of MDT's efforts to mitigate Wetland impacts. MDT did not pass.
- In 1996, MDT was 400 acres in the hole for un-mitigated wetland impacts across the state. Most mitigation consisted of ponds for waterfowl.
- In 1996, a two person unit was formed involving a wetland specialist and environmental engineer to develop mitigation for project impacts and work with an Interagency team to insure MDT mitigated wetland impacts properly.
- Current staff consists of:
  - **Shawn Bryant** – Aquatic Resource Engineer "***Keeper of the Ledger***"– Duties include: Design of sites, coordination with other MDT Units, water rights preparation, construction oversight, and coordination of design revisions with the regulatory agencies.
  - **Lawrence Urban** – Wetland Mitigation Specialist: Duties include: biological assessments, aquatic resource mitigation plan development, coordination with landowners and regulatory agencies, permitting for mitigation compliance and post-construction monitoring/maintenance/management of completed mitigation sites.
- Unit works closely with District Biologists in documenting need for mitigation for upcoming projects and development of mitigation for projects.

Early MDT mitigation project near Three Forks

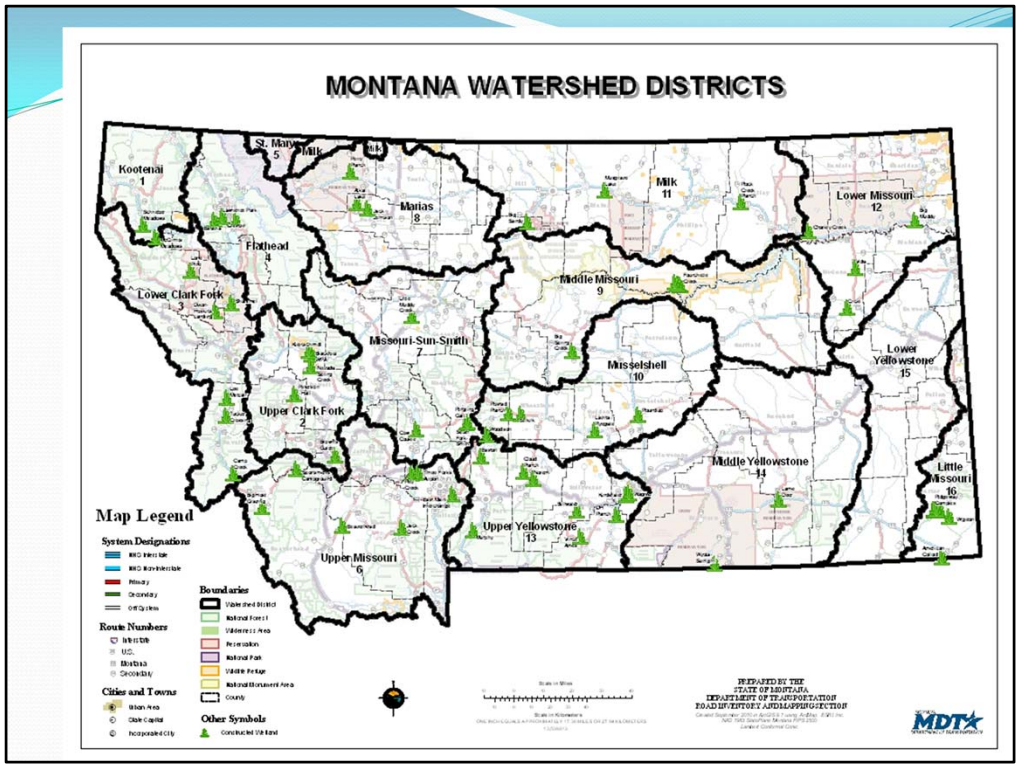

Early mitigation at Acton Borrow Site Wetland
Not Wildlife Friendly fence
'98

MDT Mitigation Goals & Objectives:

- Restoration and enhancement of degraded wetland and stream systems.
- Develop mitigation reserves in all 16 watersheds for future MDT project impacts.
- Restoration of degraded stream channels and their associated riparian wetland habitat.
- Improve habitat for sensitive and ESA fish, plant and wildlife species.
- Replace wetland functions and values of impacted wetlands such as flood control, water quality & wildlife habitat.

Mitigation Goals & Objectives:

- Provide wetland mitigation acre credits to compensate for wetland impacts in advance of project impacts. Advance planning 5 to 10 years in advance of project.
- Provide stream mitigation credits to compensate for stream impacts.
- Develop mitigation sites that provide a variety of habitat types – stream & wetland.
- Meet Federal, State and Tribal permit conditions and requirements.
- Provide a "No Net Loss" of wetlands – acre for acre at a minimum.


MONTANA WATERSHED DISTRICTS
Kootenai 1
St. Mary 5
Milk
Milk
Marias 8
Milk 11
Lower Missouri 12
Flathead 4
Middle Missouri 9
Lower Clark Fork 3
Missouri-Sun-Smith 7
Misselshell 10
Lower Yellowstone 15
Upper Clark Fork 2
Middle Yellowstone 14
Little Missouri 16
Upper Yellowstone 13
Upper Missouri 6
Map Legend
System Designations
Route Numbers
Cities and Towns
Boundaries
Other Symbols
PREPARED BY THE
STATE OF MONTANA
DEPARTMENT OF TRANSPORTATION
ROAD INVENTORY AND MAPPING SECTION
MDT

Regulations Governing MDT Aquatic Resource Mitigation Program:

- Section 404 and 401 of the Clean Water Act
- Executive Order # 11990
- Section 404(b)1 Mitigation Guidelines
- Threatened & Endangered Species Act
- 23 CFR 777 Mitigation of Impacts to Wetlands and Natural Habitat (FHWA)
- Compensatory Mitigation for Losses of Aquatic Resources (33CFR Part 332 & 40CFR Part 230)
- Montana Stream Mitigation Procedure (MTSMP)
- NEPA / MEPA
- Montana Stream Protection Act (MFWP)
- Montana Water Use Act


U.S. FISH & WILDLIFE SERVICE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Federal Highway Administration
MONTANA DNRC
MONTANA MDT DEPARTMENT OF TRANSPORTATION
Mitigation Regulators of MDT
Mitigation projects
Montana Fish, Wildlife & Parks
DEQ
Montana Department of Environmental Quality
FT.PECK TRIBES ASSINIBOINE SIOUX

TRIBAL WETLAND REGULATIONS

- Six of the seven Montana Tribal Reservations have Aquatic Resource regulations concerning wetlands.
  - Flathead Reservation
  - Blackfeet Nation
  - Fort Peck Reservation
  - Fort Belknap Reservation
  - Rocky Boy Reservation
  - Northern Cheyenne Reservation
- Wetlands and water play an important cultural role for several Montana tribes.
- Regulations are in addition to Corps requirements.
- Tribal replacement of impacted wetlands requires a minimum of 3 to 1, and if impacting higher quality wetlands (forested/shrub) higher ratios of 4 or 5 to 1.
- Mitigation must be completed within confines of Reservation boundaries and watersheds.

Ashley Creek along US 93 near Post Creek on Flathead Reservation

Scrub/Shrub and forested wetlands along US 89 on Blackfeet Reservation

Aquatic Resource Mitigation Process

- Section 404 of the Clean Water Act and Executive Order # 11990 requires that all Federally funded projects **document and implement efforts to avoid and minimize impacts to wetlands.**
- Involves working with project Design Team (DT) to avoid and minimize wetland impacts on all projects to reduce mitigation needed(Biologists).
- **Final unavoidable impacts remaining from avoidance and minimization efforts then requires MDT to mitigate impacts and initiates mitigation efforts onsite or offsite.**
- Work to identify possible locations for aquatic resource mitigation onsite within the project corridor working with Biologists, ROW and DT.
- For large projects resulting in unavoidable impacts, off-site mitigation initiates early in the DT and Planning process.


Townsend South wetland fill

Avoidance and Minimization Efforts

- Evaluate avoidance and minimization efforts to reduce impacts to aquatic resources (wetlands / streams) in the Design Process **before utilizing mitigation banks** .
- Types of Avoidance Measures:
  - Re-align road to avoid direct impacts to aquatic resources.
  - Reconstruct on same alignment for bridges or roadways.
- Types of Minimization Measures:
  - Reduction of shoulder slopes
  - Installation of guardrail close to aquatic resources
  - Installation of gabions, crib or retaining walls to reduce slopes along aquatic resources
- **After minimizing all potential impacts, only then can mitigation banks be utilized.**

Retaining wall along Little Boulder River – Spring 2016

Retaining wall along Little Boulder River – Spring 2016


Gabion Wall Big Hole River –Spring 2007

Installation of silt fencing to prevent impacts by fill materials into adjacent aquatic resources during construction.

- 2008 Federal Mitigation Rule
  - Expanded Section 404(b)(1) Guidelines and provided comprehensive mechanisms for providing compensatory mitigation only after avoidance and minimization efforts.
    - Emphasizes a watershed approach for mitigation site location
    - Requires measurable and enforceable ecological performance standards.
    - Specifies preparation of a compensation plan that addresses 12 components.
    - Provided a hierarchy and preference for compensatory mitigation:
      1. Established Mitigation Banks
      2. In-Lieu Fee
      3. Permittee Responsible Mitigation

Mitigation Rules

- **Mitigation Banks** – MDT can purchase credits from an established private bank or utilize MDT banks to mitigate impacts if available in a watershed. Banks sell credits to permitee's needing mitigation. Not many private banks in Montana (7 banks as of 11/1/2016).
- **In-Lieu Fee Purchases** – In Montana, the Montana Aquatic Resource Services (MARS) will take monies from permittees and then utilize those funds to develop mitigation in areas where impacts occur. Must develop mitigation within 2 year of accepting monies.
- **Permittee-Responsible Mitigation** – Permittees such as MDT develop their own Mitigation Banks to meet project related aquatic resource impacts.

Corps Mitigation Bank Requirements

- Corps requires perpetual conservation easements or other protective covenants to protect wetland site.
- Corps requires securing water rights for each site to protect and insure hydrology to wetland.
- Corps requires 1 to 1 acre replacement at a minimum and mitigation prior to impacts occurring.
- Mitigation must be in place prior to project impacts.
- If mitigation is after the fact or done as part of a highway project, Corps requires 1.5 to 1 acre ratio for temporal losses of wetland function at a minimum.
- Corps Stream Mitigation process requires mitigation of stream impacts over 300 feet, or less dependent upon resource.
- Mitigation efforts must be in watershed where impacts occur.

Compensatory Mitigation Types

- **Creation** (Establishment) Creating wetlands where none previously existed.
- **Restoration** – two types
  - **Re-establishment** – Restoring a wetland where one formerly existed.
  - **Rehabilitation** – Restoring functions to a degraded wetland that still meets wetlands criteria.
- **Enhancement** – Provide improvement to an existing wetland that improves its function on the landscape.
- **Preservation** – Protection of critical wetlands within the landscape that are critical regional habitat to endangered plant or animal species.
- **Upland Buffers** – A upland area that serves as a buffer between a wetland and other land uses.

2005 Wetland Compensatory Mitigation Ratios, Montana Regulatory Program

A	*Compensatory Mitigation Type*	B
1:1	Restoration (Re-establishment)	1.5:1
1.5:1+	Restoration (Rehabilitation)	2:1+
1:1	Creation (Establishment)	2:1
3:1+	Enhancement	4:1+
4:1+	Preservation (Protection)	4:1+
5:1	Upland Buffer	5:1

- + Corps will consider a range of ratios for these types

Preservation – Regionally important Wetlands

Utes Ladies' Tresses

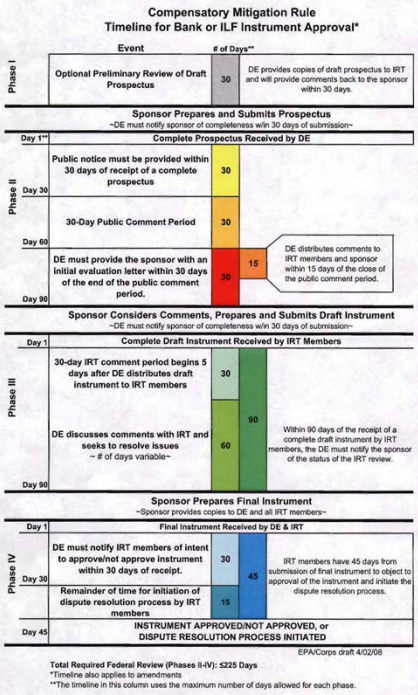
Piping Plover Chick

Habitat for Federally Listed Threatened and Endangered Species

New Corps Regulatory Requirements for mitigation are adding time and work efforts to MDT's mitigation process.

Montana Interagency Review Team (MIRT) is involved in reviewing all proposed mitigation efforts.

Approximately 225 to 250 days of review by the Corps, public and Montana Interagency Review Team under best case scenario.



Mitigation Bank Prospectus and Instrument

- MDT banks must submit a prospectus that covers 12 components to be approved by MIRT, including:
  1. Objectives:
     - Description of resource types & amounts to be provided;
     - method of compensation (restoration, creation, etc.)
     - Resource functions that will address the needs of the watershed.
  2. Site Selection:
     - Selection of a site that will adequately provide suitable credits and functions to address impacts.

Mitigation Bank Cont.

3. Site Protection Instrument:
   - Description of legal arrangements and instrument to protect finished area;
   - Long-term protection required for all projects – in perpetuity
   - Types of legal protections –
     - Fee title – Direct ownership
     - Conservation Easement on private properties
     - Deed restriction / Protective covenants on private properties
     - Transfer of ownership to an approved Conservation Group (i.e. Ducks Unlimited, Nature Conservancy, Land Trusts)

Mitigation Bank Cont.

4. Baseline information
   - Description of biological & ecological characteristics of site, including;
     - Maps showing the geographic location in the landscape & site coordinates – topographic maps/aerial photos
     - Historic and existing plant communities
     - Hydrology (well data, stream flows, precipitation data, water rights)
     - Soils – Soil series and description + field characteristics from soil borings for hydric soils
     - Delineation of existing wetlands and other aquatic resources
     - Wildlife usage
     - Functional Assessment of wetlands

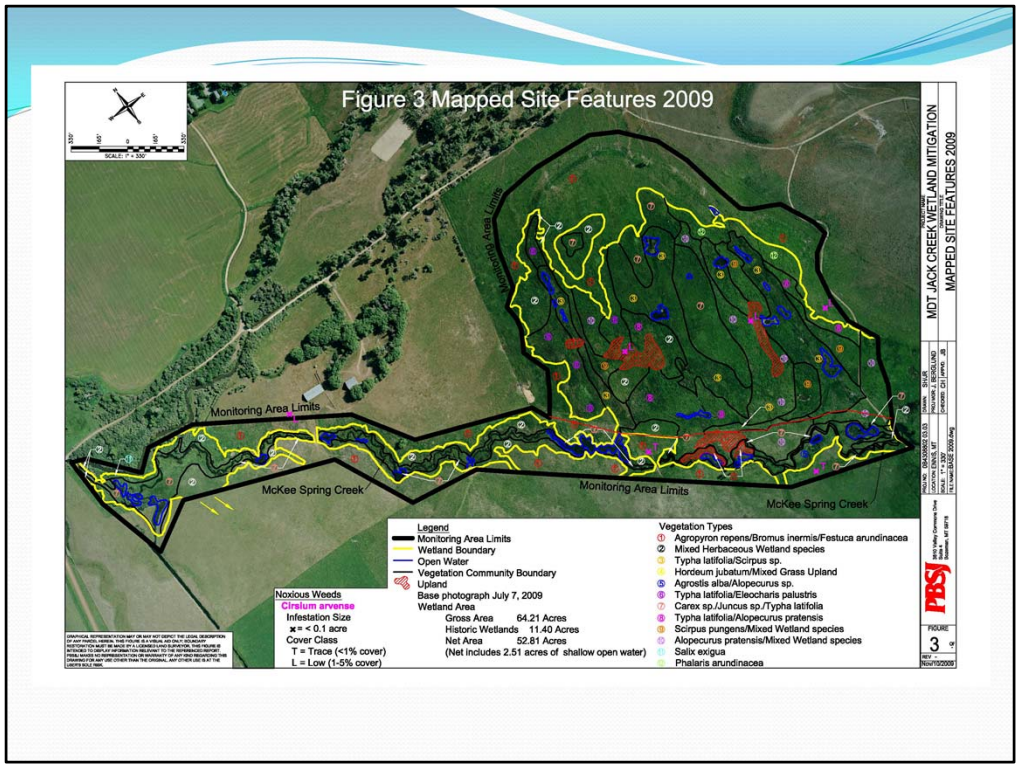
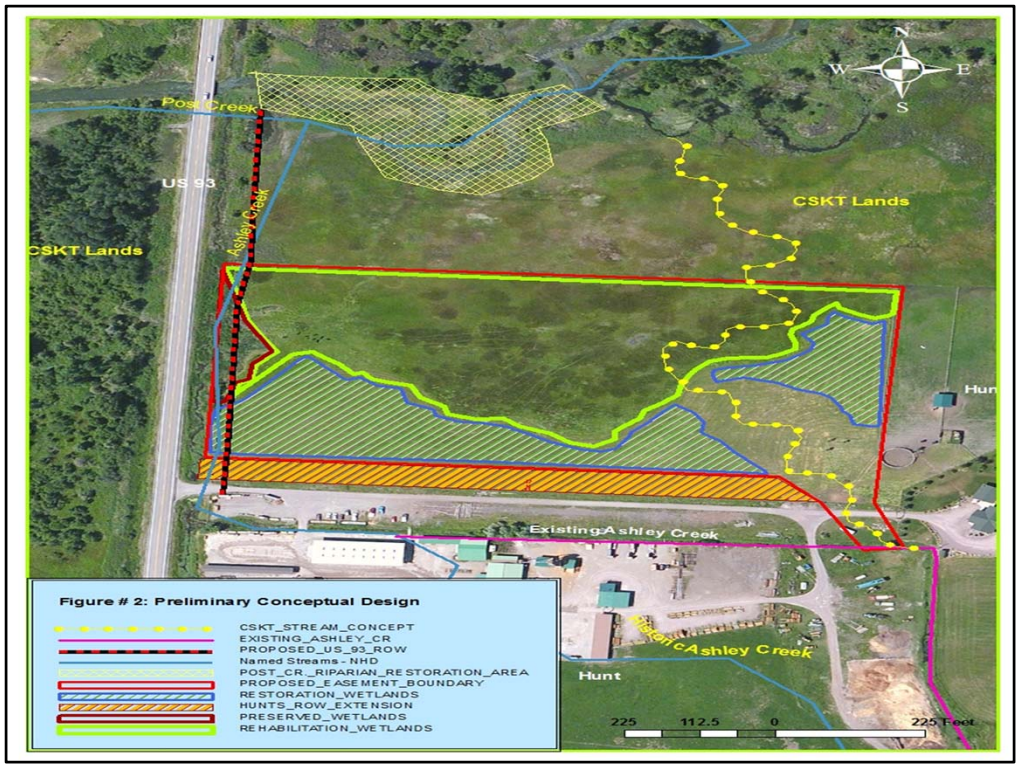


Figure 3 Mapped Site Features 2009
Monitoring Area Limits
Monitoring Area Limits
Monitoring Area Limits
McKee Spring Creek
McKee Spring Creek
Legend
Monitoring Area Limits
Wetland Boundary
Open Water
Vegetation Community Boundary
Upland
Base photograph July 7, 2009
Wetland Area
Gross Area 64.21 Acres
Historic Wetlands 11.40 Acres
Net Area 52.81 Acres
(Net includes 2.51 acres of shallow open water)
Vegetation Types
1 Agropyron repens/Bromus inermis/Festuca arundinacea
2 Mixed Herbaceous Wetland species
3 Typha latifolia/Scirpus sp.
5 Hordeum jubatum/Mixed Grass Upland
6 Agrostis alba/Alopecurus sp.
8 Typha latifolia/Eleocharis palustris
7 Carex sp./Juncus sp./Typha latifolia
9 Typha latifolia/Alopecurus pratensis
10 Scirpus pungens/Mixed Wetland species
12 Alopecurus pratensis/Mixed Wetland species
11 Salix exigua
4 Phalaris arundinacea
Noxious Weeds
Cirsium arvense
Infestation Size
x = < 0.1 acre
Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover)
MDT JACK CREEK WETLAND MITIGATION
MAPPED SITE FEATURES 2009
FIGURE
3

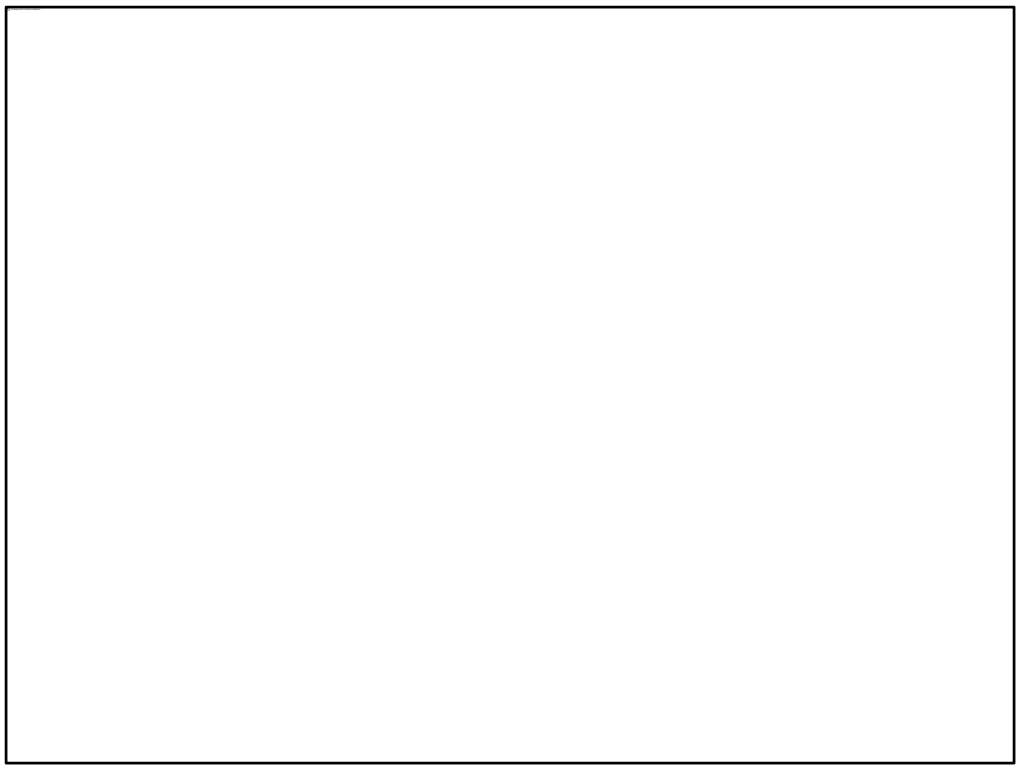
Mitigation Plans

5. Determination of Credits:
   - Proposed conceptual mitigation plan, including:
     - Project goals and objectives
     - Short and long term objectives
     - Determination of mitigation types
     - Credits to be provided within site
6. Mitigation Work Plan:
   - Conceptual plans for site.
   - Construction Methods to be utilized
   - Timing of project – anticipated start and completion dates
   - Sources of water & connections to existing water sources
   - Methods to establish desired plants
   - Erosion control measures


Post Creek
US 93
Ashley Creek
CSKT Lands
CSKT Lands
N
W
E
S
Hun
Existing Ashley Creek
Hunt
225
112.5
0
225 Feet
Figure # 2: Preliminary Conceptual Design
CSKT_STREAM_CONCEPT
EXISTING_ASHLEY_CR
PROPOSED_US_93_ROW
Named Streams - NHD
POST_CR_RIPARIAN_RESTORATION_AREA
PROPOSED_EASEMENT_BOUNDARY
RESTORATION_WETLANDS
HUNTS_ROW_EXTENSION
PRESERVED_WETLANDS
REHABILITATION_WETLANDS

Mitigation Bank Cont.

7. Maintenance plan:
   - Description of maintenance requirements to ensure viability of the aquatic resource;
   - Schedule of maintenance, i.e. water delivery dates from irrigation systems.
   - Potential maintenance activities:
     - Weed control – noxious weeds
     - Structural Repair – irrigation inlets, GW monitoring wells, dikes, Outlet pipes, etc.
     - Fence repairs – perimeters, planting enclosures, etc.
     - Planting / seeding – replacement of woody plantings, rodent protection, bare ground, etc.



Mitigation Bank Cont.

8. Performance Standards:
   - Ecologically based standards used to determine whether the site is meeting planned objectives and goals:
   - Must be measurable and reproducible – Examples:
     - Site meets 1987 Corps Regional Supplement delineation criteria.
     - Noxious weeds cover is less than 5% for the entire site.
     - 30-50 % survival of planted trees and shrubs after 5 years of monitoring.
     - The native plant Floristic Quality Index values must be greater than or equal to 20 after 5 years.
     - Area is inundated or saturated for >12% of growing season.
     - Montana Wetland Assessment Method must rate the site as a Class II wetland or higher after 5 years.

Performance Standard Examples

- Trees and Shrubs in the Wetland
  - **Performance Measure (first year plant establishment period, only)**
    - Planted woody species in the scrub-shrub (and/or forested) wetland at the MDT mitigation site will achieve at least XX percent survival one year after the site is planted. If all dead woody plantings are replaced, the performance measure will be met.
  - **Performance Measure (Year-1 and Year-3)**
    - Native woody species (planted and volunteer) will achieve an average density of at least **XX** plants per (Unit area) in the scrub-shrub (and/or forested) wetland at the MDT mitigation site.
  - Performance Measure (Year-5 / Final Year Monitoring)
    - Aerial cover of native woody species will be at least **XX** percent in the scrub-shrub (and/or forested) wetland portion at the MDT mitigation site.

Mitigation Bank Cont.

9. Monitoring plan:
   - Description of the parameters used to measure the performance standards, site objectives and goals;
   - Purpose is to track development of site and changes over a period of time - 5 years at a minimum or longer.
   - Requires a schedule for monitoring and submission of an annual report of monitoring results. Report must include:
     - Wetland delineation including map of wetland & vegetation communities.
     - Vegetation – wetland/upland species, dominant plant communities, planting success, vegetation transects, Floristic Quality Index valuations, weeds, etc.
     - Hydrology – well data, stream flows, areas of inundation.
     - Soils– hydric characteristics.
     - Wildlife Usage – birds, mammals, amphibians, etc.
     - Functional Assessments to measure improvements from existing site.
     - Site photos to assess development of site from year to year including aerial photos.